

FOLIO

University of Alberta

11 December 1986

Board of Governors



The Governors in action in 3-15 University Hall.

The last public meeting of the Board of Governors for 1986 took place on Friday, 5 December. Various matters were proposed, discussed, and approved.

MIS Program

The Educational Affairs Committee recommended and received Board approval, subject to availability of an appropriate level of funding, for the GFC-endorsed new program in Management Information Systems and Information Systems Research.

The program, which has been developed by the Faculty of Business and the Department of Computing Science, calls for a substantial upgrading of the MIS faculty and of programs in the Faculties of Business and Science. According to Board documentation, the programs will be affected:

- MIS core course offerings will be enhanced in the BCom program and a new major in MIS will be provided.

- The Business Applications Stream of the BSc in Computing Science will be strengthened by the addition of a number of new MIS courses.

- At the graduate level, there will be four MBA/MPM courses in the Faculty of Business, a project course and a non-credit prerequisite. This last course and one of the others will be required of all MBA students.

- There is also provision for new directions in graduate studies and research.

Bonnie Kerr, Senate appointee, questioned the validity of approving new programs "subject to the availability of an appropriate level of funding". She further wondered what priority was now attached to the recently endorsed program in hotel and restaurant management. Vice-President Meekison responded. He noted that the University proposes new programs to government and that the government, appropriately, makes decisions about which programs to fund. Such decisions are based ultimately on Alberta's needs.

Continued reliance on traditional sources of funding was also a question. The President pointed to the new program in computer-assisted cartography

sponsored by Geography which elicited funds from a government department other than Advanced Education. Perhaps the hotel and restaurant program could look to departments responsible for small business and tourism for some support.

In reply to public appointee Jack Scott, the President affirmed the University's first priority: expansion of the University's offerings and facilities in the computing sciences.

It was acknowledged that the MIS program calls for substantial financial support. That support has been initiated by the Principal Group which will endow a Chair in Management Information Systems.

Department Chairmen

The Board Educational Affairs Committee announced that it had received for information notice of the re-appointment of two Chairmen in the Faculty of Medicine. Gerald L. Higgins holds the rank of Professor and has been Chairman of Family Medicine since 1982; Henry T. Wyatt, also

Continued on page two

More Money Raised this Year for United Way

The final count is in.

We raised \$132,730 for the United Way campaign, thanks to 675 cheerful campus givers. That's 89 percent of our goal (\$150,000)—and \$810 more than we gave last year.

Organizers and Agencies are grateful to all who responded to the need—more critical than ever this year.

The over-all United Way campaign raised \$6,151,000. While that's 3 percent short of their goal, it's still a 6 percent increase over last year's total.

Contributions are still trickling in, and organizers say it's never too late to give. Call 432-3207 for information. □



Quote

"This package of materials has been prepared to give you the most important basic information you will need . . .

You will find inside:

- (1) Bulletin Subscription Form . . .
- (2) Computing Services Tour O124

This text-and-photo booklet takes you on a guided tour . . .

- (3) Computing Services O120

This brochure is the first thing to read."

Source: Computing Services Introductory Kit (September 1986). □

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- Keeping (gilt-edged) tabs on a royal quest
- The dioxins: Part II
- From the pages of *Research Report* . . .



11 December 1986

Board of Governors continued

Professor, has been Chairman of Ophthalmology since 1982. Their's is a five-year term, beginning on 1 July 1987.

SLRT Extension

Tim Miner, Director of Planning and Development, and Al Robertson, Planning Engineer in the same office, reported on the proposed extension of the city's light rail transit system under the University area.

The "University Station" will be set diagonally across the quadrangle south of the Rutherford Library and 89 Avenue at a depth of 28 metres below grade. There will be some disruption in the general area but it will be minimized by mining the space for the station's platform rather than adopting a 'cut and fill' approach. There will be two large shafts excavated, one more or less in the centre of the Rutherford quad and the other south of 89 Avenue.

The "riser" in the Rutherford quad will add a design constraint to any southern expansion of the Library.

Work on "University Station" is scheduled to begin during the first quarter of 1988. The station is expected to be operational by the

end of May, 1991. (This program too can be said to be "subject to an appropriate level of funding".)

University Funding

President Horowitz summarized recent discussions he and the other University presidents had with the Minister of Advanced Education. Simply, he said, funding for post-secondary education and this University will be "less than is the case for the present budget year" with respect both to operating and capital budgets. The "messenger," Dr. Horowitz said, "is awfully nice." The message, however, is "upsetting".

Our Minister, Dave Russell, has been candid. He has stated, for example, that his Department will be subject to a higher percentage cut than the agencies it serves. He has also said that the formulae governing student fee increases arrived at in the years of Jim Horsman's administration may have to be put aside, thus allowing a ceiling on increases higher than the current 6 percent that the Horsman guidelines would allow.

Increased fees will mean increased appeals for student assistance. The Minister, however, has indicated that this area will also be subject to retrenchment.

Chairman of the Board John Schlosser put a possible tuition increase in perspective. Current revenue from fees accounts for approximately 10 percent of the University's operating budget. Thus, a 10 percent rise in those fees would affect only c. one percent of the cost of our annual operations. Mr. Schlosser strongly affirmed the need for appropriate funding for this University which should be counted among the top three in Canada. He pointed to the situation in British Columbia where drastic cuts are recognized to have done long-term damage to that province's University system. He also referred to Ontario, where government grant increases of around 10 percent will need to be repeated if that province's universities are to recover in three to four years.

"It is a myth that we can absorb cuts like this." Dr. Horowitz outlined elements to be taken into account when dealing with the "impending agony": for example, fees, number of people, levels of remuneration, numbers of students. No one element, he said, would be singled out to bear the brunt of potential cuts. Indeed, until the dimensions of the budget reductions are known, no decisions will be made. He publicly assured NASA observer Brendon O'Neill that the University's support staff will not become a primary area in which such reductions will take place, as was apparently the case not so long ago.

The strategies for implementing cuts depend too on how the University's budget is assessed, globally or seriatim. Clearly the University would have greater flexibility if capital and operating budgets—and additional "growth" funds from increased enrolment—could be mixed, with the decision where to cut being our administration's responsibility.

In any event, the Minister has assured the Universities that notice of 1987-88 funding will be delivered to each institution shortly, possibly by the end of December.

The University and Gainers

As President, Dr. Horowitz has received letters and representation concerning both sides of the matter—whether or not the institution should boycott Gainers products. He, therefore, reported the University's position with respect to the purchase and use of Gainers foodstuffs.

The University accepts as its policy a recent Housing and Food Services Council recommendation that it continue its practice of purchasing products of "high quality, best price, and greatest market acceptability". There was a consensus in the Council that "the Gainers matter does not command the concern of significant numbers of students". (The Council is chaired by Associate Vice-President Rennie and is composed of the presidents of the six student tenant associations, the SU Housing and Transport Officer, a member of the support staff, the Dean of Students and the Director of Housing and Food Services. The recommendation was unanimous.)

The President emphasized that the position adopted is a University position. Individual members of our community will, of course, make their own choices.

Senate Chamber

In his report, Chancellor Miller complimented the Registrar's staff, especially, for the dignified and well orchestrated Convocation exercises. After which he invited Senate colleague Bonnie Kerr to report on fund raising in support of the restoration of the Senate Chamber in the Arts Building.

Mrs. Kerr was happy to say that these activities are now complete, with 20 chairs being sponsored each for \$1,000. The funds, from many people and agencies, including the Students' Union and the Board of Governors, will allow restoration of the historic room. This was the first formal assembly room of the University's governing council, opened on 6 October 1915. □

FOLIO

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Selection Committee for Director, Student Counselling Services

The Nominating Committee is seeking nominations for one faculty member, not a member of the unit concerned, to serve on the above Selection Committee.

Would those who have suggestions for nominations, or who are interested in serving on this Selection Committee, please communicate with Mrs. P. Plaskitt, 2-5 University Hall, 432-4715. It would be appreciated if a *vita* could accompany any nomination.



Activities

Siegfried Schaible (Finance and Management Science) was invited to speak at the bi-annual symposium on "Operations Research" in Oberwolfach, West Germany. His schedule also calls for him to lecture on some of his recent research results at the Faculty of Commerce and Economics, University of Pisa . . . The Department of Sociology recently welcomed **Derek Sayer**, formerly of the University of Glasgow, as Associate Professor of Sociology. Dr. Sayer is author of *Marx's Method: Ideology, Science and Critique in "Capital"* and, more recently, co-author of both *The Great Arch: English State Formation as Cultural Revolution* (with Philip Corrigan) and *Society* (with David Frisby) . . . **Yar Slavutych** (Emeritus, Slavic and East European Studies) was awarded the Ivan Franko Literary Prize for his ninth book of poetry, *Living Torches* (in Ukrainian). His *An Annotated Bibliography of Ukrainian Literature in Canada: Canadian Book Publications* was published recently . . . **Einer Boberg** and **Deborah Kully** (Speech Pathology and Audiology) attended the annual conference of the American Speech and Hearing Association in Detroit where they presented a technical paper and a short course describing the Stuttering Treatment Program developed at the University of Alberta . . . On 26 November, **Myer Horowitz** addressed the Mayfield Rotary Club at its weekly luncheon on the topic, "The University and Its Future."

Royal Scot on Campus?

Special to Folio

The man who would be King of Scotland is alive and well and working as a humble news-agent on the University of Alberta campus.

"Bonnie Prince Charlie is a French-speaking latecomer, and James the First (or Sixth) sold his birthright to the English," says claimant Doug Bruce, discovered by a *Folio* staff reporter giving away matches in HUB Mall, in a desperate attempt to make a living.

"My grandparents came from Peterhead," says Bruce, now approaching his critical 30th year. (This is the year when would-be kings traditionally put up, shut up, or retire to moaning exile in the sun.) "Somehow, I must get over there, to stake my claim to the crown," he says, holding back the tears with a copy of the *News of the World*.

The royal claimant realizes the

fight ahead will be a tough one. But he has studied hard: he already holds two degrees from the University of Alberta, one in physical education, the other in education.

"I'm ready to defend my claim, with heart and hand," says Mr. Bruce, vowing solemnly not to descend to violence, on his royal quest. (*Folio* will keep readers up to date on Mr. Bruce's heroic efforts.—Ed.) □

Have Computer, Will Travel if Export Permit in Pocket

People in Customs and Traffic, a division of the Materials Management Department, have some advice for staff whose international travel plans call for them to take their personal computers along. PCs can not be taken out of the country without proper federal authorization. The Department of External Affairs requires an export permit for trips to any country except the United States. It can take up to six weeks to obtain the permit, *Folio* has learned.

Persons scheduling such trips are asked to check with Customs and Traffic, 432-4638. □

Holiday Publishing Schedule

For obvious reasons, *Folio* will not publish on 25 December and 1 January. Contributors and advertisers are reminded that the deadlines for the next issue—8 January 1987—are 9 a.m. (copy) and 3 p.m. (advertisements) on Tuesday, 30 December. □

Letters

Folio English

■ On the principle that it is of some importance that University publications observe correct English, I should like to object to "Accommodations" in the advertising section of *Folio*.

While I admit that the word "accommodations" enjoys rather widespread use in North American speech and writing, it is for all that incorrect.

When a noun is correctly used in the plural form it should be possible to ask "How many . . . ?" "How many accommodations?" However we are surely not going to say that, for instance in your October 30th issue, there were fourteen accommodations advertised for sale. I doubt if anyone would argue that that was correct. What we have to ask is "How many houses . . . ?" or "How many units of accommodation . . . ?"

And suppose there had been only one for sale. Are we then to say "Only one accommodations for sale?" Obviously not. But neither can we say "Only one accommodation for sale." That the latter will not do reveals, again, that "accommodations" is not possible. For if there could be a number of accommodations, it would have to be possible for there to be one accommodation also. But this is not possible, and, quite rightly, people never say "an accommodation" (in reference to housing).

The word therefore has to be accommodation, as is recognized in English English usage. The widespread North American use of "accommodations" is simply a widespread incorrect use (but not, as I have explained, because it is a North American use).

Suppose you ran a column advertising a variety of rides to campus, by car, private bus, limousine, etc. You might well head such a column "Campus Transportation". You surely wouldn't head it "Campus Transportations". But if you did, I should challenge you to explain what could possibly be meant by "one (or a) transportation", just as I now challenge you either to explain what could be meant by "one (or an) accommodation", or to abandon "Accommodations" in favour of "Accommodation"!

J.C. MacKenzie
Department of Philosophy

Ed. note:

- *Compact OED*, Oxford (1971), p. 15: "7. esp. Room and suitable provision for the reception of people; entertainment; lodgings. (Formerly mostly in pl.)"

- *Random House Dictionary of the English Language*, New York (1966), p. 9: "5. usually accommodations. a. lodging."

- *American Heritage Dictionary of the English Language*, New York (1969), p. 8: "3. Plural a. Lodgings; room and food."



Convocation Hall Access

■ Recently members of the Department of Music have brought to my attention the fact that many people are assuming that due to the Old Arts Building renovations, Convocation Hall is no longer accessible. In actual fact, the renovations have restricted access to only the east centre doors, and one must take a short walk to the Business Building for washroom facilities.

One does not have to "pick a path through the construction rubble" as a local newspaper reported recently, to attend any of our musical events.

Many concerts have already taken place in the Hall and on 10 January, our concerts begin again with the third in a series of four ENCOUNTERS concerts. Please inform your readers that Convocation Hall is much the same as it always has been; a place to hear some great music.

Brenda Musselman
Department of Music

The Dioxins: Fears and Facts (Concluding Installment)

Question: Would you comment further on the toxicity of 2,3,7,8-TCDD to humans?

As you may well imagine, this subject has had extensive scrutiny. From environmental in contrast to industrial exposures, no significant and identifiable human health problems appear to have resulted. Tschorley (1986) concluded that evidence of serious effects on human beings from environmental exposures is lacking. As reported in a recent book on the subject, Gough (1986) has digested and analyzed the volumes of contradictory statements that cloud the issue. In a number of industrial accidents many hundreds of workers have been subjected to relatively high levels of 2,3,7,8-TCDD. The main result is that some but not all developed chloracne. While not downgrading its seriousness, Gough concluded that little beyond chloracne has resulted in those who have been most heavily exposed.

Even though hundreds of workers have been overexposed to 2,3,7,8-TCDD at levels that are not exactly known, that is still not a large number in epidemiological terms. To draw valid conclusions about the possibility of marginal long-term effects, large numbers may be required. In any event, it is not possible to prove the absence of a long-term effect.

Although I would not choose it, we are going to continue to be exposed to dioxins and a host of other unwanted substances at some minimal levels. With every breath I inhale carbon monoxide at some level, and though I cannot prove it, I am certain that I am not being harmed even slightly. Not much can be done about environmentally produced dioxins. Fortunately, these amounts are too small to be a significant threat.

Question: Do large numbers of individuals need to be exposed before conclusions can be drawn about acute exposures to toxic substances?

It depends on the substance and the circumstances. As an example, with carbon monoxide a single death from overexposure is enough to soundly conclude that carbon monoxide is lethal.

Question: Are there any adverse effects of 2,3,7,8-TCDD on humans even from slight exposure?

That question sends us into the realm of conjecture. As the exposure level to any toxic substance decreases, a point is reached where the uncertainties in the observations necessarily become excessive. From that point down to all lower values, hypothesis and not scientific fact is involved. One hypothesis involves the "linear no-threshold assumption", where it is assumed an adverse effect exists at all levels all the way to zero (linear extrapolation to zero from a region where reliable observations can be made). This assumption is instinctively attractive, but it is not a scientific fact, and is neither proved or provable. Even so, most people, including regulators and many scientists, not only favor it but speak and write as though it were a fact. The news media also continually reinforce this authoritative misinformation (though not using the technical terminology) in the public mind. The other hypothesis is the "threshold assumption": that there is a threshold level below which there is no effect.

Question: I am not sure why the linear no-threshold assumption should not be considered correct.

One reason that the threshold assumption may be more realistic is that it has often been noted that extremely low levels of agents, harmful at higher levels, have a positive stimulatory effect rather than a negative one (Ottoboni, 1984). This is one of the reasons I favor the threshold assumption. Believe what you choose, but by either hypothesis, recognize that minimal exposures represent insignificant effects. I mentioned that we all probably have 5 to 10 parts per trillion of 2,3,7,8-TCDD in the fat of our bodies; on the basis of the few known human over-exposures my opinion is that, if there is a threshold, it is probably hundreds of thousands of times higher than this natural level.

Three or four decades ago it did not matter whether a distinction was made between the two hypotheses. The limits of detection for highly deleterious substances were typically at least a million times poorer than they are today. In the past, if something nasty was not detected, one's mind could be at ease. Now we can detect a host of undesirable materials in virtually everything. To state simply that something has been "detected" or "found" in anything has caused a lot of needless apprehension. The situation today is that our ability to detect and measure has outstripped the ability of the public to put things into perspective. Because something can be detected does not necessarily mean it is a threat. I think it is time that scientists in particular should begin to give at least equal emphasis to the threshold assumption.

Question: What about public demands for regulations?

Regulators face a thorny problem. In the past, regulatory limits for many substances have been set on the simple basis of the then current detection limits. But now detection limits are so low that there is no significant relation between detectability and level of risk. To use detection limits as a basis for choice is now absurd. Rational foundations for choices should be found.

For dioxins we would presumably have to have 75 different regulatory limits. A reasoned choice of regulatory limit for 2,3,7,8-TCDD would be outrageous for the octachloro dioxin. Regulations based on animal studies are likely to be inappropriate in view of the large species differences. Understandably, the regulators have not been able to reach many conclusions.

Question: What of political overtones?

The situation is politically loaded. For example, in the Seveso accident the 2,3,7,8-TCDD in 41 barrels of wastes should have been destroyed immediately, but seemingly no one would grant permission. The barrels have reputedly been lost in West Germany, France, and East Germany. Italy has refused to take them back. The Rechem Co. in England had appropriate high-temperature incineration facilities, but the English House of Commons would not permit their importation for destruction. The Green Party in Germany was pressing charges. The Vatican became involved.

Obtaining public permission to destroy 2,3,7,8-TCDD is usually the most intractable aspect of the political problem.

Question: Are there legal implications?

There have been claims of harm from dioxins where the exposure has resulted in few or no cases of chloracne. One example is the Agent Orange claim by Vietnam veterans; another is the claim of some Nova Scotia citizens. These were claims where legal decisions were required, but where scientists are only able to gradually move to a consensus. In the Agent Orange case the judge concluded that the evidence did not support a finding that the amount of 2,3,7,8-TCDD present in the material had caused disease among the now 200,000 claimants. An expensive settlement was reached prior to a jury trial. In the Nova Scotia case the judge ruled that the plaintiffs had failed to prove a sufficient degree of probability of risk to health and did not support their case. In these types of claims, legal decisions, in contrast to scientific truth, must be obtained.

In a search for evidence of long-term damage from low-level exposures, more and more expensive epidemiological studies have been called for. As Gough pointed out, most such studies have become "fishing expeditions" and have failed to reveal effects. It now appears that the conclusion of the majority of those who have examined the evidence concerning human health effects of 2,3,7,8-TCDD at levels below that causing chloracne is that there is little or no harm.

Question: What is the current situation on the matter of dioxins and municipal garbage incineration?

This is the hottest dioxins topic of the mid-1980s. Conferences with hundreds of participants have recently been held on this topic. Incinerator fly ash has been found to retain traces of a host of substances, including many dioxins. This information has been received by some with consternation. But the dioxins are strongly absorbed on the fly ash, and their biological availability must be low. Among the dioxins the 2,3,7,8-TCDD may be present, but in a negligible proportion of the total. In high-temperature incinerators (1000°C or more) fly ash contains much tinier traces, primarily of the most stable and relatively harmless octachloro compound.

My opinion is that the long-term favorable experience with municipal incineration, the extremely low levels of the dioxins, and their low biological availability make incineration a sound method of municipal garbage management. However, the fact that modern techniques have revealed traces of a variety of dioxins in municipal incinerator fly ash alarming to many.

The public and politicians will have to resolve a psychological and political problem here. The public retains a belief in the attainability of zero exposures. But modern analytical techniques can now show detectable amounts of virtually everything in virtually anything. Furthermore, simply everything is toxic at some level. Judgments will have to be made despite incomplete knowledge and in the face of public anxiety.

Question: Are studies on the dioxins still being carried out? To say studies are being carried out is an understatement. Literally hundreds of millions of dollars are being spent in this direction. Although costs will decrease, a single analysis for 2,3,7,8-TCDD at a part per trillion in a complex sample costs thousands of dollars. Epidemiological studies are extremely expensive if they are to be reliable. Important basic scientific information is being obtained on the mechanism of action of 2,3,7,8-TCDD, on understanding the controls for cell differentiation, enzymatic reactions, and so forth. Studies are obtaining an understanding of how 2,3,7,8-TCDD binds to soil so as to be biologically unavailable. Reasonable answers have been obtained for most questions, and further research will add refinement. I refer to questions such as the natural level of 2,3,7,8-TCDD in various foods, how long it is retained in the body, how long it lasts in soil, and how the amount, toxicity, and availability of dioxins in fly ash compare with the dioxins from events and activities that produce dark smoke. Several major symposia and meetings have been devoted exclusively to interchanges of information on such technical questions. One highly informed colleague is of the opinion that the high point in terms of useful research was reached two or three years ago.

Question: Are there problems that cannot be answered by more scientific research?

Earlier questions alluded to several problems. Probably the most important one is how much of our national budget we should continue to allot to the study of dioxins, and the related furans (which are also nasty but less strongly so), relative to other pressing national problems.

Fears exist about exposure to minute amounts of dioxins, because people believe that an adverse effect exists at even the smallest level of exposure (the linear no-threshold assumption). The fear is that one person in a million, or in 10 million, will suffer from even a tiny exposure. Here we are getting into an area where more scientific research can never allay fears or give the answers—such matters are not observable or measurable. With current instrumentation and techniques, analytical chemists are certainly going to be able to find minute amounts of dioxins (and many other undesirable substances) in all our food and drink. The problem we have is in accepting that this is so; yet knowledge is preferable to ignorance. We have to learn to adjust to the fact that zero contamination exists only in dreams.

Question: Since it is not possible to cover all the questions in the space available, can you recommend some references?

Here are five.

1. M. Gough, *Dioxin, Agent Orange*, Plenum Press, New York, 1986. I highly recommend this book. The author was with the Congressional Office of

Technology in the U.S. His book includes much of what is known about Agent Orange and veterans' health, Times Beach and other sites in Missouri, Seveso, the Nitro explosion, industrial exposures, animal tests, and more. One reviewer of the book stated: "His study will be in the forefront of dioxin literature, past, present, and future".

2. The June 6, 1983, issue of *Chemical and Engineering News*. This issue gives extensive background on history, chemistry, toxicity, and regulatory and legal matters. It is slightly out of date, being three years old.

3. F.H. Tschorley, *Scientific American*, 254, p. 29, Feb. 1986. This article examines toxicity information concerning 2,3,7,8-TCDD.

4. M.A. Kamrin and P.W. Rodgers, Eds., *Dioxins in the Environment*, Hemisphere Publishing Co., New York, 1985. It includes information on furans as well as dioxins.

5. M.A. Ottoboni, *The Dose Makes the Poison*, Vincente Books, Berkeley, 1984. This book deals broadly with toxicology misconceptions and misinformation. Its subtitle, "A plain language guide to toxicology", indicates the book is written for the general public. Chapter 9 on misconceptions is especially recommended.

Question: In summary what are your comments?

There are 75 chlorinated derivatives of dioxin, each different, all useless, and only recently recognized in the trace amounts in which they exist. They are formed naturally and by human activities. The most toxic one, 2,3,7,8-TCDD, was formed industrially in amounts that caused serious problems. In a number of incidents hundreds of people have been made seriously ill. However, there have been no attributable deaths or increases in death rates for those most exposed. We all are and will continue to be exposed at a minimal level. The problem will be of decreasing significance as old sites are cleared and the industrial processes generating 2,3,7,8-TCDD are discontinued. Dioxins can be destroyed by ultraviolet light or by high-temperature incineration. At the concentrations at which they occur it appears that the other 74 are not significant contributors to toxicity. It is the most toxic one of the dioxins that presents severe challenges in the industrial, scientific, regulatory, political, legal, and psychological areas.

In the first installment of this interview (*Folio*, 4 December 1986), it was noted that the worst incident involving 2,3,7,8-TCDD occurred in Seveso, Italy, in 1979. The year should have read 1976.

Acknowledgement

A draft of the material presented here was reviewed and commented on by a number of colleagues in Edmonton, elsewhere in Canada, and in the U.S. Their thoughtful suggestions are acknowledged with thanks. □

Searching in the Dark: The Scientist's Life

Understanding how a new drug works can take years of research—often down blind alleys.

Five years ago, a pharmacist at the University of Alberta began investigating a new compound that works in a unique way and has unique possibilities as an anti-psychotic drug.

Years later, although a great deal of work has been accomplished, Terry Danielson is still baffled by the unknown mechanism that makes fluoroamphetamine work—and he is still as convinced now as he was then that discovering the mechanism is simply a matter of time.

Time (next to money) is what scientists need most.

Danielson points out that most scientific discoveries are made only after years (and years) of laborious and painstaking research. "The plodding process of investigating possibilities, and eliminating them, is 98 percent of what science is about," he says. "But every day you still think, 'Today could be the day!'" It's that thought that keeps him (and thousands of scientists like him) working away in the lab year after year.

Fluoroamphetamine, the novel drug Danielson is working on, was created by taking amphetamine and replacing one hydrogen atom in its structure with a fluorine atom.

Plain amphetamine causes body temperature to rise and physical

activity to increase. But when Danielson's mice get a shot of fluoroamphetamine, they show none of the effects of amphetamine, nor do they respond to amphetamine. This means that fluoroamphetamine is able to block the effects of amphetamine.

Drugs that block amphetamine may be useful as anti-psychotics. But most anti-psychotic drugs produce catatonia (a state in which the subject adopts a strange, fixed position).

Fluoroamphetamine is unique in that, in blocking amphetamine, it does not produce catatonia.

The mechanism by which it does the blocking also appears to be unique.

What that mechanism is, and what role it plays in the normal

brain, is the puzzle Danielson is working to solve.

Tests have eliminated all established possibilities. Now he has to find new answers.

Danielson describes what he is doing as "like working inside a very long, very dark tunnel, in which we have successfully put out every pinpoint of light that we could see. But the drug is obviously doing something. There has to be a mechanism that does it, and finding out what it is is a matter of time."*□

*Folio drew this article and "Now We Are Four . . ." (page 6) from the most recent issue of Research Report, a Media Service.

Funds Needed for Notley Scholar

The fund-raising campaign to establish an endowed post-doctoral fellowship in honor of Grant Notley is in its final phase. A spokesperson for the Development Office says people can contribute in two ways. "First, consider attending the Grant Notley Dinner, a fund-raiser scheduled for Friday, 6 February, at the Four Seasons Hotel. The \$100 per person cost allows you to share

in a tribute, not only for one evening, but in a lasting way."

Dave Barrett, former leader of the New Democratic Party of British Columbia, will be guest speaker. The dinner is expected to attract a wide variety of people who espouse diverse political views.

"Or, if the dinner does not appeal to you, please make your

year-end contribution by cheque to the Grant Notley Memorial Fund, and send it to the Development Office" (450 Athabasca Hall, Edmonton, Alberta T6G 2E8).

Each of the Notley Scholars will hold the position for only two years. Preference will be given to Western Canadian research topics: the work may focus on economics, history, or political science, and will be non-partisan. The endowment fund will also support an annual event, such as a Notley debate, lecture, or symposium, to which the public will be invited.

The goal is to conclude the fund-raising campaign in February, apply for and secure government matching grants, and begin advertising the position in September 1987. The appointment of the first Notley Scholar could be announced by 1 April 1988.

Dial 432-4418 (Development Office) for more information on the Grant Notley Memorial Fund or the Grant Notley Dinner. □

Nominations Invited for Faculty of Arts Undergraduate Teaching Awards

In the interests of recognizing excellence in teaching and to encourage teaching of the highest quality, the Faculty of Arts gives up to three Undergraduate Teaching Awards annually. The Faculty of Arts Undergraduate Teaching Awards Committee is interested in receiving nominations for this award. Permanent staff with at least five years of full-time teaching experience are eligible. Nominations can be made by students, colleagues and/or department chairpersons. Because each department is permitted only one nomination and documentation is required, interested persons should discuss possible nominations with the appropriate department chairperson.

The deadline is 16 January 1987.

The Faculty committee also selects from the nominations it receives the Faculty of Arts' nominees for the University's Rutherford Awards for Excellence in Undergraduate Teaching.

Now We Are Four: or, How Parents Cope With Two Children

A survey of two-child families comes up with some surprising (and reassuring) findings.

Most new parents feel that becoming a parent for the first time is a "crisis" experience. Even five years later a lot of them still call the experience "terrible".

So how do they feel when the second child arrives?

To find out, family studies expert Wesley Adams surveyed parents in 100 two-children families.

Because studies on one-child families seem to have focussed on the downside of the experience, Adams geared his study—which also asked about the first child experience—"to look at all aspects, including surprises and happinesses."

And all aspects turned up.

One of the happinesses, says Adams, seems to be that "sex returns with the birth of the second child."

Before the first child arrived, more than 80 percent of husbands and wives rated their sex life as "good" to "very good"; after the child was born, only about 50 percent of them rated it as highly. But both before and after the birth of the second child, about 65 percent of husbands and wives rated their sex life as "good" to "very good".

The item rated "most difficult" by most parents was "time needed for two children", although they felt only slightly more work was involved; next most difficult item was "stress of parenting"; third was "discipline problems"; while "sibling rivalry" didn't seem to cause much concern at all.

Both parents rated very highly the enjoyment of "watching the children interact". They also enjoyed the fact that they were "less up-tight with the second child", and took for granted "their ability to love both children".

What did surprise both parents was "how different each child is".

When it comes to relationships with in-laws, Adams' survey seems to dispel a common myth about mothers-in-law: 78 percent of husbands rated their relationship with their mother-in-law as "good" to "very good"; and so did 64 percent of wives.

However, Adams is cautious as yet about all the findings.

"The information shouldn't be thought of as definitive," he says. "It's only a first step in creating a knowledge base." □

Positions

The University of Alberta is committed to the principle of equal opportunity in employment and encourages applications from all qualified people.

In accordance with Canadian Immigration requirements, these advertisements are directed to Canadian citizens and permanent residents.

Academic

Program Promotion Officer, Faculty of Extension

The Faculty of Extension requires an experienced marketing-oriented advertising or sales promotion executive to promote its continuing education programs.

You will need diplomatic and professional skills in this decentralized environment. This is a managerial position that requires leadership and hands-on ability in writing or creative direction. Promotional planning experience would be a decided asset.

This one-year appointment may be renewed depending on budget and performance. Salary is negotiable in the range of \$30,000 to \$40,000.

If you want to work in Canada's second largest university—in a challenging environment—write, including a résumé, prior to 31 December 1986, to: Dr. Dennis Foth, Dean, Faculty of Extension, University of Alberta, Edmonton, Alberta T6G 2G4.

Tin Deposits Mined

The "Tin Minute Workout," conducted on 26 and 27 November, produced 284 tins of various food-stuffs and \$143 in cash donations.

Campus Recreation and the Edmonton Food Bank thank everyone who participated. □

Chairman, Department of Educational Psychology

The Faculty of Education invites nominations and applications for the position of Chairman of the Department of Educational Psychology. The department's offerings include courses and programs in basic theoretical educational psychology, measurement, special education, and counselling and school psychology.

The department has 45 full- and part-time faculty members and 7 secretarial staff. There are approximately 200 graduate students.

The position should be filled by 1 July 1987. Salary will be commensurate with qualifications and experience.

Applications or nominations, accompanied by a *curriculum vitae* and the names of three referees, should be sent by 31 January 1987 to: Dr. R.S. Patterson, Dean, Faculty of Education, University of Alberta, Edmonton, Alberta T6G 2G5.

Support Staff

To obtain further information on the following positions, please contact Personnel Services and Staff Relations, 2-40 Assiniboia Hall, telephone 432-5201. These vacancies cannot be guaranteed beyond the date of publication.

Clerk Steno III (Term for one year),
Educational Administration,
(\$1,366-\$1,716)

Clerk Steno III, Education Field Serv.,
(\$1,366-\$1,716)

Administrative Clerk (Term for one year), Faculty of Extension,
(\$1,522-\$1,945)

Departmental/Executive Secretary,
Physics, (\$1,716-\$2,208)

Departmental/Executive Secretary,
(Trust - 20 hrs/wk), Faculty of
Medicine (Animal Ethics Committee),
(\$1,716-\$2,208)

Technician II (Trust/Part-time), Physical Therapy, (\$896-\$1,152)
 Engineering Technologist II, Physical Plant—Plant Operations, (\$1,864-\$2,407)
 Technologist I (Trust), Applied Sciences in Medicine, (\$1,945-\$2,510)
 Technologist I/III (Trust), Pharmacology, (\$1,945-\$2,992)
 Administrative Assistant I (Trust), Department of Medicine, (\$1,945-\$2,510)
 Administrative Assistant I, Faculty of Extension, (\$1,945-\$2,510)
 Programmer Analyst I (Trust), Linguistics, (\$1,945-\$2,510)
 T.V. Producer II, Instructional Technology Centre, (\$2,208-\$2,861)
 Occupational Health Nurse, Occupational Health and Safety, (\$2,304-\$2,992)
 Programmer Analyst II, Printing Services, (\$2,304-\$2,992)
 Programmer Analyst III, Computing Science, (\$2,741-\$3,579)
 Programmer Analyst III, Geology, (\$2,741-\$3,579)

For vacant Library positions, please contact the Library Personnel Office, Basement, Cameron Library, 432-3339.

Talks

Economics

11 December, 3 p.m. Robert J. Barro, University of Rochester, "Government Spending, Interest Rates, Prices, and Budget Deficits in the United Kingdom, 1701-1918." 3-10 Business Building.

Canadian Institute of Iranian Studies

12 December, 7:30 p.m. David Marples, "Chernobyl and Nuclear Power in the USSR." Heritage Lounge, Athabasca Hall.

Anatomy and Cell Biology

16 December, 4 p.m. Paul St. John, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland, "Analysis and Isolation of Mammalian Neurons by Fluorescence-Activated Cell Sorting," 6-28 Medical Sciences Building.

Alberta Heritage Foundation for Medical Research

18 December, 4 p.m. Randall T. Irvin, Department of Botany, University of Toronto, "Adherence of *Pseudomonas Aeruginosa* to Human Respiratory Epithelial Cells." 2-27 Medical Sciences Building. Host: Department of Biochemistry.

The Arts

Ring House Gallery

Until 11 January. "Ashoona Pitseolak—An Unusual Life"—a retrospective exhibition of prints by this C. Dorset artist.
 Until 11 January. "Keeveek Aware!"—an exhibition of coloured pencil drawings by Baker Lake artist, Victoria Mamnguqsualuk.

Music

15 December, 8 p.m. Chamber Music Concert.
 16 December, 8 p.m. Chamber Music Concert. Both concerts in Convocation Hall.

SUB Theatre

18 December, 5:30 p.m. The Edmonton Jaycees present "A Christmas Variety Show." Tickets: \$6 at the door, or by calling 426-2525.

Broadcasts

Radio

CJSR-FM

Eclectic programming, including folk, jazz, new music, rock and U of A news and sports coverage. See *Airtight* magazine for full programming details. Send public service announcements to 224 SUB, 432-5244.

Advertisements

Accommodations available

Sale - Tudor, two-storey. Indoor pool. Attractive country acreage. Close to city. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
 Sale - Hobby farm. Seventy acres, just south of city limits. 2,300' bungalow. Fully developed. Many extras, pasture and grain. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
 Sale - Choice city lots. \$39,750 up. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
 Sale - Miquelon. Lakefront lots. Offers! Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
 Sale - University exclusive. Short walk to campus. 1 1/2-storey with hardwood floors. Enjoyable south yard. By appointment. Harold Sager, 436-5250, 436-5102. Spencer Realtor.
 For sale - Windsor Park. Gorgeous, newly renovated home. Jacuzzi, main floor laundry, large windows. Bright and sunny. Ian Beattie, Re/Max Real Estate, 438-1575.

For sale - Grandview. Six bedrooms, nanny suite, large living room and dining room. Beautiful treed lot. Ian Beattie, Re/Max Real Estate, 438-1575.
 Sale - Owner. Ravine, three-bedroom bungalow, garage. Parkview location. \$90,000 10 1/4% assumable mortgage. \$104,900. 484-6791.

Sale - Riverbend. Two-storey, immaculate, four-bedroom home. Neutral tones, three-piece ensuite with master. Fireplace in family room. Main laundry, double attached garage. \$128,000. Liz Crockford, Spencer Realtor, 436-5250.

For sale - Beautiful river view property. Five bedrooms, jacuzzi, fireplaces, superior construction and private location. Ten minutes to University. Liz Crockford, Spencer Realtor, 436-5250, 434-0555.

For sale - Executive townhouses expertly finished. Over 2,000 sq. ft. Jacuzzi, fireplaces, double garage. Ravine lot on one. From \$129,900. Liz Crockford, Spencer Realtor, 436-5250, 434-0555.

Sale - Well-maintained bungalow.

Crescent location, Parkallen. Lovely treed lot. \$69,900. Call Joyce Byrne, 435-6064, 436-5250. Spencer Realtor.

Sale - Just listed, attractive, four-bedroom home. Sparkling hardwood floors, recreation room down. Sunny south yard. Easy access University. \$79,000. Call Joyce Byrne, 435-6064, 436-5250. Spencer Realtor.
 Rent - Five-bedroom house, University area. Garage, two bathrooms, \$795 per month. Available January 1987. Phone 435-6878 after 6 p.m.

Sale - Think summer. 70 acres, attractively treed property, southside of Wizard Lake. Half mile lake frontage. \$30,000. 488-5649.

For rent - January-August 1987.

Two/three-bedroom house. Fifteen-minute walk from campus. Two bathrooms, den, study. Two Siamese in residence. 432-2180, 439-1077.

Rent - Going overseas. Main floor house. Furnished. Two bedrooms, study. Garage. Seven-minute drive to campus. Two direct busines. Christmas or 1 January-30 April. 468-3302 evenings.

Accommodations wanted

Married couple available to house-sit 1 January, preferably in University area. Non-smokers. Excellent references. Contact Arlene, 432-4145 daytime. Wanted to rent: House close to University, 4-5 bedrooms. One year from July 1987. 432-6501 bus., 431-1026 res.

Automobiles and others

1981 Fiat Brava. Two-litre fuel injection. Low kms. Excellent condition. Phone Dave, 473-5921 or 476-0250. After 5 p.m. for appointment.

For sale - 1985 Dodge Charger, sun roof, automatic, ps, pb, 2.2 engine, radio, in-car and block heaters. 30,000 miles, \$6,500. Call 438-3443 evenings.

Goods for sale

Santa Claus ideas: used typewriters from \$50, new typewriters from \$189, computer interfaceable typewriters from \$425. Mark 9, HUB Mall, 432-7936.

Cash paid for appliances, 432-0272. 48" Yamaha upright, studio piano in excellent condition and still under warranty. 436-4006 after 5 p.m.

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Typing Associates word processing. \$1.35 per double-spaced page. Shannon, 462-3825.

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Faculty of Extension

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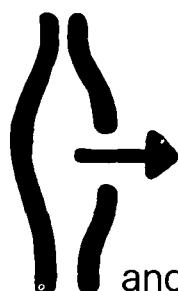
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Buy a Fitness Gift Certificate for your friend. Give it to them at Christmas. Take Care - this may result in a tearful scene as they weep through sheer joy and gratitude. Have your friend bring the certificate to Campus Recreation Room W1-08 in the Van Vliet Physical Education Centre. We'll enroll them directly for any class they choose.

NO WAITING! A place in any fitness class is guaranteed until Friday, January 9th.

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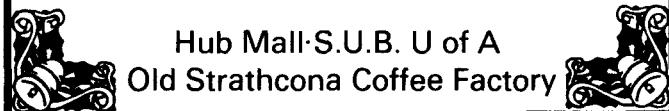
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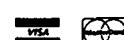
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